



2017-2018

1.6 Zeros

Name _____ Date _____ Period _____

Without graphing, determine the number of zeros for each of the following polynomials.

1. $f(x) = 2x^2 - 8x + 6$

2. $f(x) = x^4 - 2x^2 - 5x + 6$

3. $f(x) = x^2 - 3x + 2$

4. $f(x) = -x^3 - x^2 - 5x - 3$

5. $f(x) = x^3 - 3x + 2$

6. $f(x) = x^5 - 3x$

Find the zeros of each polynomial.

7. $f(x) = (x+2)(x-2)(x-3)$

8. $f(x) = 3x(x+2)(5x-4)$

9. $f(x) = (x+1)(2x-3)$

Write an equation in factored form for the function with the given zeros.

10. $x = 4, 7, -2$

11. $x = 5, 4, -8, -6$

Write an equation in standard form for the function with the given zeros.

12. $x = 2, -3$

13. $x = -5, -7$

Factor to find the zeros of each of the following polynomials.

14. $f(x) = x^2 + 3x - 10$

15. $f(x) = x^2 - 36$

16. $f(x) = 3x^2 - 7x - 6$

17. $f(x) = x^2 + 10x + 24$

For each of the given polynomials, determine which of the binomials listed are factors. Use synthetic division on #18 and the Remainder Theorem on #19. There may be more than one answer.

18. $f(x) = -2x^2 + 15x - 7$

a) $x + 1$

b) $x - 7$

c) $x - 2$

19. $f(x) = x^3 + 3x^2 - 4x - 12$

a) $x + 2$

b) $x - 2$

c) $x + 3$

Simplify.

20. $\sqrt{25}$

21. $\sqrt{12}$

22. $\sqrt{96}$

23. $\sqrt{360}$

24. $3\sqrt{50}$

25. $6\sqrt{25}$

Use the quadratic formula to find the zeros of each polynomial. Leave in radical form.

26. $f(x) = -4x^2 + 3x + 1$

27. $f(x) = -5x^2 - 2x + 3$

28. $f(x) = 3x^2 + 6x - 13$

29. $f(x) = x^2 - 8x - 4$

Simplify each of the following radicals.

30. $\sqrt{32}$

31. $\sqrt{-25}$

32. $\sqrt{-72}$

33. $\sqrt{-45}$

Simplify.

34. $(-6i)(-5i)$

35. $3(2i)(-4i)$

36. $(-2i)(2i)$

37. $(5i)(5i)$

38. $(3+i)(5-2i)$

39. $(x-i)(x+i)$

40. $(x-7i)(x+7i)$

41. $(x-3-2i)(x-3+2i)$

42. $(x-4-i)(x-4+i)$

43. $(x-5-2i)(x-5+2i)$

Factor each expression over the complex numbers. Write your answer in factored form!

44. $f(x) = x^2 - 4x + 5$

45. $f(x) = x^2 + 9$

46. $f(x) = x^2 + 4x + 7$

47. $f(x) = x^2 + 64$

48. $f(x) = 2x^2 + 6x + 5$

49. $f(x) = 9x^2 - 6x + 5$